

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. - 25. Canceled.

26. (Previously presented) The process according to claim 32 wherein the  $\text{Al}_2\text{O}_3$  membrane is formed from an  $\text{Al}_2\text{O}_3$  slurry.

27. - 31. Canceled.

32. (Currently amended) A process for manufacturing a capacitive vacuum measuring cell, comprising the following steps:

- a. manufacturing a first  $\text{Al}_2\text{O}_3$  housing plate (1) with outer and inner opposing surfaces and an outer periphery;
- b. forming an electrically conductive surface (7) on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to provide a first electrode of the capacitive vacuum measuring cell;
- c. manufacturing a second  $\text{Al}_2\text{O}_3$  housing plate (4) with an outer periphery;
- d. forming an opening in the second  $\text{Al}_2\text{O}_3$  housing plate (4) extending therethrough;
- e. ~~sealing~~ providing a connecting port (5) about the opening formed in the second  $\text{Al}_2\text{O}_3$  housing plate (4);
- f. manufacturing of an  $\text{Al}_2\text{O}_3$  membrane (2) having first and second opposing

surfaces and an outer periphery, the membrane having a thickness within the range of 10  $\mu\text{m}$  to 250  $\mu\text{m}$ , the manufacture of the  $\text{Al}_2\text{O}_3$  membrane (2) including the steps of:

- i. forming the  $\text{Al}_2\text{O}_3$  membrane (2) from an  $\text{Al}_2\text{O}_3$  slurry;
  - ii. heating the membrane in a furnace a first time to sinter the membrane, with subsequent cool-down; and
  - iii. heating the membrane a second time for smoothing the membrane, with subsequent cool down;
- g. forming an electrically conductive film (7) on the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to provide a second electrode of the capacitive vacuum measuring cell;
- h. disposing the  $\text{Al}_2\text{O}_3$  membrane (2) between the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1) and the second  $\text{Al}_2\text{O}_3$  housing plate (4), with the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) facing the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1), and spacing the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) at a predetermined distance from the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1) to define a reference vacuum chamber (25) therebetween, and spacing the second  $\text{Al}_2\text{O}_3$  housing plate (4) at a predetermined distance from the second surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to define a measurement vacuum chamber (26) therebetween; and
- i. sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane (2) to the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate (1) and the second  $\text{Al}_2\text{O}_3$  housing plate (4) to form a vacuum tight seal therebetween.

33. Canceled.

34. (Currently amended) The process recited by claim [33] 32 wherein the step of forming the  $\text{Al}_2\text{O}_3$  slurry includes the steps of forming a ~~ribbon-shaped~~  $\text{Al}_2\text{O}_3$  green body upon a carrier foil, and subsequently pulling the ~~ribbon-shaped~~  $\text{Al}_2\text{O}_3$  green body from the carrier foil.

35. (Currently amended) The process recited by claim 32 including the further steps of forming ~~a first~~ an electrical, vacuum-tight feedthrough (6) through first  $\text{Al}_2\text{O}_3$  housing plate (1), and coupling said ~~first~~ electrical, vacuum-tight feedthrough (6) to the electrically conductive surface (7) formed on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to effect electrical coupling thereto.

36. (Currently amended) The process recited by claim [34] 32 including the further steps of forming ~~a second~~ an electrical, vacuum-tight feedthrough (6) through first  $\text{Al}_2\text{O}_3$  housing plate (1), and coupling said ~~second~~ electrical, vacuum-tight feedthrough (6) to the electrically conductive surface (7) formed on the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to effect electrical coupling thereto.

37. (Currently amended) ~~The process recited by claim 32~~ A process for manufacturing a capacitive vacuum measuring cell, comprising the following steps:

a. manufacturing a first  $\text{Al}_2\text{O}_3$  housing plate (1) with outer and inner opposing surfaces and an outer periphery;

b. forming an electrically conductive surface (7) on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to provide a first electrode of the capacitive vacuum measuring cell;

- c. manufacturing a second  $\text{Al}_2\text{O}_3$  housing plate (4) with an outer periphery;
- d. forming an opening in the second  $\text{Al}_2\text{O}_3$  housing plate (4) extending therethrough;
- e. providing a connecting port (5) about the opening formed in the second  $\text{Al}_2\text{O}_3$  housing plate (4);
- f. manufacturing of an  $\text{Al}_2\text{O}_3$  membrane (2) having first and second opposing surfaces and an outer periphery, the membrane having a thickness within the range of 10  $\mu\text{m}$  to 250  $\mu\text{m}$ ;
- g. forming an electrically conductive film (7) on the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to provide a second electrode of the capacitive vacuum measuring cell;
- h. disposing the  $\text{Al}_2\text{O}_3$  membrane (2) between the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1) and the second  $\text{Al}_2\text{O}_3$  housing plate (4), with the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) facing the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1), and spacing the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) at a predetermined distance from the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1) to define a reference vacuum chamber (25) therebetween, and spacing the second  $\text{Al}_2\text{O}_3$  housing plate (4) at a predetermined distance from the second surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to define a measurement vacuum chamber (26) therebetween;
- i. sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane (2) to the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate (1) and the second  $\text{Al}_2\text{O}_3$  housing plate (4) to form a vacuum tight seal therebetween;
- j. including the further steps of forming a getter opening (13/14) within the first  $\text{Al}_2\text{O}_3$  housing plate (1) communicating with reference vacuum chamber (25),

- k. disposing a getter (10) within said getter opening (13/14),
- l. ~~pumping down~~ evacuating the reference vacuum chamber (25) ~~to evacuate matter therefrom~~, and
- m. activating the getter (10) ~~to further lower the pressure~~ within reference vacuum chamber (25).

38. (Currently amended) The process recited by claim 37 including the further steps of extending the getter opening (13/14) through first  $\text{Al}_2\text{O}_3$  housing plate (1), applying a vacuum pump ~~to getter opening (13/14) to pump down~~ the reference vacuum chamber (25), and subsequently applying heat to a cover (8) overlying getter opening (13/14) to form a vacuum-tight seal between the cover (8) and the first  $\text{Al}_2\text{O}_3$  housing plate (1) and simultaneously activating the getter (10).

39. (Currently amended) The process recited by claim 32 wherein said step of sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate includes the steps of:

applying a glass paste to the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane;

disposing the  $\text{Al}_2\text{O}_3$  membrane between the outer peripheries of first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate;

heating the  $\text{Al}_2\text{O}_3$  membrane and the first and second  $\text{Al}_2\text{O}_3$  housing plates to a temperature above ~~330 degrees~~ 300 degrees Centigrade to sealingly join the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate.

40. (Canceled).

41. (Canceled).

42. (Canceled).

43. (Canceled).

44. (Previously presented) The process recited by claim 32 wherein the membrane has a thickness within the range of 10  $\mu\text{m}$  to 120  $\mu\text{m}$ .

45. (Previously presented) The process recited by claim 32 wherein the membrane has a diameter within the range of 5 mm to 80 mm.

46. (Previously presented) The process recited by claim 32 wherein the membrane has a diameter within the range of 5 mm to 40 mm.

47. (Previously presented) The process recited by claim 32 wherein the membrane material has a grain size less than 20  $\mu\text{m}$ .

48. (Previously presented) The process recited by claim 32 wherein the membrane material has a grain size less than 10  $\mu\text{m}$ .

49. (Currently amended) The process recited by claim [33] 32 wherein the step of heating the  $\text{Al}_2\text{O}_3$  membrane the second time for smoothing the membrane includes the step of pressing the membrane between two flat plates.